

BACKGROUND OF THE INVENTION

1. Technical Field

This application is a continuation-in-part of pending United States Application No. 09/906,458 filed on July 16, 2001, which is a continuation-in-part of pending United States Application No. 09/538,540 filed on March 30, 2000. The present invention relates to a rigid container or canister suitable for storing food products (consumables) with a multi-functional cap. In one embodiment, the cap nests over the mouth end of the container when the container is sealed, but can also nest with the base end of the container for storage while the container is in use. A sub-container or promotional item can be placed within the cap and kept separate from the food product. Further, when inverted, the cap seats into the mouth end of the container, thereby acting as a bowl. The container consists of a molded body that can be wrapped with a thin film graphics carrier. In one embodiment of the invention, the thin film graphics carrier contributes to the barrier properties of the container. The container stands unsupported for a shelf display or can be vendable from soft drink vending machines.

2. Description of Related Art

The design and construction of packaging for containers of consumables, such as potato chips, tortilla chips, chip and dip kits, or other snack products, requires the consideration of several sometimes competing factors. One factor to consider is that the container must be designed to protect the product contained therein from degradation, microbial spoilage, and physical damage. Ideally, the container should possess barrier properties that limit or prohibit the migration of oxygen, moisture, and light through the container when sealed. Oxygen and

moisture migration into a container reduces the product's shelf life. Product degradation can also be slowed if the barrier properties of the container limit the exposure of the product to light.

Breakage of the product can be limited by either placing the product in a rigid container or providing sufficient slack-fill in a non-rigid container to provide an air cushion within the

5 container.

Another factor to consider regarding consumables container design is the marketing aspect, or presentation, of the container. A consumables container should provide an appealing presentation of the product contained therein. It is often desirable that the container be capable of standing unsupported on a store shelf. Further, the container must be capable of supporting graphics either affixed to the container or embedded in the container to assist with brand recognition and the appearance of the packaging. Many prior art containers are constructed of at least three layers, and typically more, consisting of a moisture barrier, an oxygen barrier, a light barrier, and a graphics carrier, all of which are molded or shaped for a desired presentation.

The specific barrier properties of a container are frequently dependent on the product that must be protected. For example, some products, such as crackers, do not need an oxygen barrier for protection. Likewise, other products may not need a moisture barrier or a visible light barrier. Consequently, containers are usually designed with the minimal barrier properties required to protect the specific products to be contained therein.

Another factor in consumables container design is the economics and efficiencies of filling and shipping the container. Containers are ideally constructed to easily and efficiently fill with product on a production line. Further, the containers must fit economically into boxes or crates in order to minimize shipping costs. It might also be beneficial for individual components

of a container, such as a container cap, to be easily stacked for shipment and handling prior to installation on the container.

Another design criteria for consumables container design is the cost and ease of construction of the container. Every layer added to the container may provide additional desired barrier properties. However, the addition of every layer also drives up the cost of constructing the container. Generally speaking, less expensive containers limit the layers of material and the amount of material involved in the construction of the container.

A design of a specific consumables container may also have many application specific design criteria. For example, marketing considerations may make it desirable to construct the container so that it is particularly useful in dispensing or holding a product while being consumed by the consumer. The container may be designed with an easy-open top, a dimension or shape that makes it easy to hold the container in one hand, and an opening sufficient in size for the consumer to retrieve the product from the container by pulling out the product by hand. Another example of an application specific consideration involves dispensing consumables containers from what are traditionally soft drink vending machines. Such containers, referred to as "vendable" containers, must be designed of an appropriate dimension and weight to be easily loaded and dispensed from standard soft drink vending machines. Such dimensions can also make a container suitable for use with a cup holder in an automobile.

Likewise, the ergonomics of the container must be considered. The container can be designed to be easily grasped and held in one hand. Some containers are designed to allow for direct consumption of the product by pouring the product out of the container into the consumer's mouth.

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portion of the food product in the container. While some prior art containers combine two of the features listed above, none of them incorporate a cap design that acts as a cup that can be placed on top of the container, can be stored on the bottom of the container when not in use, and used to seal the container for storage of the food product, along with a container design that lends itself to single-handed use by the consumer in a vendable and shelf presentable package. Further, none of the prior art containers incorporate a cap design that acts as a separate compartment for a second product to complement the primary product such as dip for potato chips. Prior art "chip and dip" combination containers are very expensive, difficult to use, bulky, and unattractive. For example, one prior art design comprises a bulky thermoformed tray that is used to contain a bag of chips and a dip container. The tray is sealed with a large film to hold the contents in place. The end user removes the film, opens and pours the bag of chips into the tray and then eats from this large package. Because of its bulk, the package is not very portable, and the costs of manufacturing are high.

Accordingly, a need exists for an easily manufactured consumables container that incorporates a multi-functional cap with an economical design. The container should provide acceptable and appropriate barrier properties, as well as physical containment and protection of the product. The multi-functional cap should act as a sealing means on the mouth end of the container, should store on the bottom of the container when not in use, and should act as a cup or bowl that can be seated on the top of the container for single-hand use by the consumer. The multi-functional cap should also be adaptable for storing a second product such as dip or a promotional item separate from the main product. The multi-functional cap should allow for effective and efficient re-sealing of the unused portion of the product(s). The container should be

capable of standing unassisted on store shelves or, alternatively, being dispensed from a soft drink vending machine. Such a design should be simple and inexpensive to manufacture, provide for packaging and filling efficiencies, and be intuitively functional to the consumer.

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SUMMARY OF THE INVENTION

The proposed invention comprises an economically designed, vendable container for snacks and other perishable foods with a multi-functional cap. One embodiment comprises a generally cylindrical container with a multi-functional cap nested over the mouth end of the container and an outer film wrapped over the cap and container after the container is filled. The outer film can also complement the barrier properties of the container.

The invention is simple and inexpensive to manufacture, provides adequate protection for the product contained therein, and is easy to use for the consumer. The multi-functional cap reseals the container, can be used as a bowl for product and as a compartment for a second product such as a condiment or promotional item. The container is capable of standing unassisted on a store shelf or being dispensed from a soft drink vending machine. The container is an improvement over the prior art in ease of manufacture, packaging efficiencies, and functional use by the consumer.

The above as well as additional features and advantages of the present invention will become apparent in the following written detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will be best understood by reference to the following detailed description of illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

Figures 1a and 1b are perspective views showing a cylindrical embodiment of the invention;

Figures 2a and 2b are perspective views illustrating the removal and filling of the multifunctional cap in one embodiment of the invention;

Figure 3 is a perspective view of a cylindrical embodiment of the invention with the cap inverted and seated in the open end of the container;

Figure 4 is a perspective view of a cylindrical embodiment of the invention with the cap nested on the bottom of the container;

Figure 5 is a perspective view of caps of one of the embodiments of the invention stacked together;

Figures 6a, 6b, 6c, and 6d are perspective and partial views of a gabled carton embodiment of the present invention;

Figures 7a, 7b, and 7c are perspective and partial views of a tear-away cap and square shaped container embodiment of the present invention; and

Figures 8a, 8b, and 8c are perspective and partial views of a pop-top cap and square container embodiment of the present invention.

Figure 9a is a side view of a multiple product embodiment of the present invention.

Figure 9b is a perspective view of a multiple product embodiment of the present invention showing the cap removed.

Figure 9c is a perspective view of a multiple product embodiment of the present invention showing exposed chips and dip.

5 **Figures 10a** is a perspective view of a standard cup being inserted into a cap in accordance with a multiple product embodiment of the present invention.

Figure 10b is a side view of a multiple product embodiment of the present invention with a sectional view of the cap showing a standard cup inside the cap.

Figure 10c is a perspective view of a multiple product embodiment of the present invention utilizing a standard dip cup showing the re-assembly of the container after it is opened by a user.

Figure 11 is a perspective view of a multiple product embodiment of the present invention utilizing a pouch for holding a product.

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The first step in manufacturing the container of Applicants' invention involves constructing the receptacle 100. This is typically done by blow-molding of the material selected, but could also be accomplished by injection molding, thermal forming, or other means used in container manufacturing. After the receptacle 100 is removed from the mold, it can be filled with product or consumables, such as corn-based snack foods, dropped into the receptacle 100 through the mouth end 102. After the receptacle 100 is filled with product, a removable seal (shown as reference 220 in Figure 2a) is secured over the mouth end 102 of the container by methods well known in the industry. This removable seal can be, for example, a metalized polyester secured by a heat and pressure seal or other means. Once the removable seal is placed over the mouth end 102, the cap 110 is then nested over the mouth 102.

Referring to Figure 1b, an outer layer 112 is then wrapped over the cap 110 and a portion of the receptacle 100. In the alternative embodiment that requires more barrier properties than provided by the receptacle 100, the selection of whether the outer layer 112 is a material that also provides additional oxygen barrier, moisture barrier, or light barrier properties depends on the selection of the material used for the receptacle 100. If the receptacle 100 material provides an oxygen barrier, the outer layer 112 material selected could provide moisture barrier properties, and *vice versa*. The outer layer 112 can also act as a graphics carrier. Alternatively, the container can be constructed without an outer layer 112 by embedding graphics within the receptacle 100 or screen printing graphics directly on the receptacle 100.

The outer layer 112 can comprise a shrink-wrap and made of, for example, polyethylene terephthalate to provide additional oxygen barrier properties or polypropylene to provide additional moisture barrier properties. Both materials can also act as acceptable graphics

carriers. One embodiment of the container uses a polyvinyl chloride shrink wrap **112**, which adds additional light barrier properties when used as a graphics carrier and some additional moisture barrier properties.

The list of acceptable materials for use in either the receptacle **100** or the outer layer **112** is not exhaustive. Rather, any material available in the field of art that provides the adequate barrier properties along with desirable molding, rigidity, and graphics characteristics can be used in combination. This is true for all embodiments of the invention.

To further reduce manufacturing costs and complexity, the embodiment shown in **Figure 1b** illustrates that the outer layer **112** is wrapped such that it covers all but the top end **110a** of the cap **110** and the bottom or base **104** of the container. By not wrapping the top of the cap **110a** and the bottom **104** of the container, the application of the outer layer shrink-wrap **112** is simplified and requires less material per container. The potential loss of barrier property provided by the outer layer in this design is minimal because the bottom **104** of the container will typically rest on a hard surface and, at least until opened, the container mouth **102** further incorporates a removable seal which can provide substantial barrier properties of its own. Alternatively, the outer layer **112** could be wrapped only over the receptacle **100**, thereby further saving manufacturing costs.

In a vendable embodiment of the present invention, the height of the receptacle **100** from the mouth end **102** to the bottom **104** is approximately 6.63 inches. The diameter of the receptacle **100** at its maximum dimensions above and below the center section **106** is approximately 2.75 inches. The maximum circumference of the container above and below the center section **106** should be identical, in order to provide support between adjacent containers

when proceeding down a processing line, when stacked on store shelves, or packed for shipping, by allowing contact between the containers both below and above the center of gravity of each. This contact at the bottom and top of adjacent containers helps with the stability of the containers when placed in contact. The minimum circumference of the center section **106**, in this vendable embodiment, is approximately 2.4 inches. The total height of the container with the cap **110** nested on the mouth end **102** in this embodiment is 7.84 inches. Such dimensions are suitable for vending the container from a standard 20-oz. soft drink vending machine.

As shown in **Figure 1a**, the mouth end **102** is slightly tapered both to properly nest in the cap **110** and to provide a pouring function from the mouth end **102** into the cap **110** or other receptacle. Further, the tapered shape helps prevent unintended spillage of the product out of the mouth end **102**.

Figures 2a and 2b show the container in use by a consumer. First, the consumer removes the cap **210** by twisting the cap **210** and breaking the outer layer at the intersection of the cap **210** and a rim **214** below the mouth end **202**. The removal of the cap **210** reveals the seal **220** affixed to the mouth end **202**. The seal **220** is removed by pulling on an exposed tab **222**.

Once the seal **220** is removed, the contents of the container, such as a puff-corn snack **230**, can be poured into the cap **210**. The product **230** can also be poured directly into the consumer's mouth. To reseal the container, the cap **210** is again nested over the mouth end **202**.

The container is designed to provide a convenient one-hand use, as illustrated in **Figure 3**. Once filled, the inverted cap **310** can then be seated in the mouth end **302** of the container, thus both holding product **330** for consumption and sealing the container. Since the vendable design of the container closely approximates a 20-oz. bottle of soft drink, the container can be

held in one hand while the consumer removes product 330 from the inverted cup 310 with the other hand. The container can also be placed in a typical cup holder inside a vehicle while the consumer is consuming the product 330 from the inverted cap 310.

Another function of the cap allows for it to be stored at the bottom of the container. This is illustrated in **Figure 4**, which shows the cap 410 nested over the base of the container. In this configuration, the consumer can pour product directly into the consumer's mouth, hand, or other container without worrying about holding the cap 410 or placing it in a location for later retrieval and resealing of the container.

Figure 5 illustrates another feature of one embodiment of the invention. Specifically, three caps 509, 510, 511 are shown stacked together to illustrate the packing efficiencies accorded by the cap design. Specifically, a collar around the open end of the cap (which is the only portion of the middle cap 510 exposed) provides for easy stacking and unstacking of the caps after manufacture and prior to installation on the receptacle. This collar promotes automatic stacking of the cups without sticking together and increases the hoop strength of each individual cap. Further, it is understood that the cap can be manufactured of material and in a manner similar to that discussed with regard to the manufacture of the receptacle portion of the invention.

The embodiment illustrated involves a generally cylindrical shape. However, it should be understood that the invention could also comprise any number of shapes. For example, a triangular geometry could be used for the receptacle in order to accommodate stackable tortilla chips. A square or rectangular geometry could be used to accommodate square crackers or other similar products. Likewise, it may be desirable to construct an oval geometry for the receptacle, as opposed to circular geometry, to more closely approximate to the shape of form-fried and

stacked potato chips. The geometry of the cap can be adjusted to match the geometry with the receptacle in order to provide the nesting, sealing, and seating functionality previously described.

Further, the container could comprise other designs for the cap and mouth end of the container, including a gabled carton type opening. Examples of other alternative embodiments of the

present invention, illustrating primarily various container and cap designs that can be incorporated in any number of combinations, are shown in **Figures 6a, 6b, 6c, 6d, 7a, 7b, 7c, 8a, 8b, 8c, 9a, 9b, 9c, 10a, 10b, and 10c.**

A gabled carton shaped embodiment is shown in **Figures 6a, 6b, 6c, and 6d.** This container can again be comprised of a receptacle and outer graphics layer as described previously with regard to the alternative cylindrical embodiments. Likewise, the shape of the container itself can be primarily square, as illustrated, cylindrical, triangular, or any other number of shapes to accommodate various products or promote various marketing considerations. A variation illustrated in this embodiment, however, is the gabled carton top **650**. This top is opened by pulling apart two tabbed sealing members **652, 654**. This opening action of pulling on the two sealing members **652, 654** is illustrated in **Figures 6b and 6c.** Once the gabled carton top **650** is opened, the product **630** can be poured out for consumption, as illustrated in **Figure 6d.**

Figures 7a, 7b, and 7c show another variation on a square shaped container with a tear-away tab **762** which seals a cap **760** to the top of the container. To access the product, the consumer tears away a removable pull tab and seal portion **762** and removes the cap **760**, as is illustrated in **Figure 7b.** Removal of the cap **760** then makes the product **730** available to the consumer as is illustrated in **Figure 7c.** The cap **760** in this embodiment can be snapped back onto the container, nesting in a ridge **764** defining the opening of the container.

Figures 8a, 8b, and 8c illustrate another variation on a square shaped container that incorporates a snap-off lid 870. This snap-off lid 870 is removed from the container by pressing upward on an integral tab 872, as illustrated in Figure 8b. This exposes a seal 820, which in turn is removable by pulling back on a tab 822 component. Once both the cap 870 and seal 820 have been removed from the container, product 830 can be dispensed from the container, as illustrated in Figure 8c.

Figures 9a, 9b, and 9c illustrate a container for holding two types of products in separate compartments. The container 905 may be used, for example, to conveniently hold chips and dip. The dip is placed in the cap 910 and the chips are placed in the receptacle 915. A removable seal 920 is used to seal the dip into the integral cap and dip container 910. Similarly, a removable seal 925 is used to seal chips or other food product in the receptacle 915. After the chips and dip are sealed into the main body and the cap, respectively, the cap 910 is snapped onto the receptacle 915. An outer layer may be placed over the container as described above in reference to Figure 1. The container 905 can be displayed in an inverted position as shown in Figure 9a to make the display more stable since the dip in the cap 910 is heavier than the chips in the container 915, thus resulting in a lower center of gravity than would be the case if the container were placed in an upright position. Figure 9c is an illustration of the product being consumed. The removable seals 920, 925 have been removed by the consumer and now the cap 910 acts as a bowl from which the dip may be consumed. The chips 930 may be consumed directly from the main body 915 or the consumer may pour some or all of the chips out of the container. The container may also be re-closed by the consumer to save the unused chips and/or dip for later consumption. The nature of the container 905 allows the packaging process to be fully

automated without the need for someone to assemble or hold the cap on the container until an outer layer is placed around the product.

Figures 10a, 10b and 10c illustrate a container for holding multiple products in separate compartments in which a standard cup is used. A standard cup **1005** with a removable seal **1030** is nested in a cap **1010** and chips or another suitable food product is placed in the receptacle **1015** and a removable seal attached to the mouth of the receptacle **1015** to seal the food product. The standard cup can be any container for holding consumer portions of products such as chili cups, dip cups, cheese cups, ketchup pouches, or other condiments or products that may be contained within said cap **1010**. The standard cup **1005** is typically limited in volume to the volume of the cap **1010**. Although this embodiment is described in terms of a "standard cup" commonly used in the art, the invention is not limited to the use of a standard cup. Other sub-containers may be used with the invention herein. The dimensions of the cap **1010** should be such that the standard cup **1005** will fit into the cap **1010**. Preferably, the standard cup **1005** is a slightly loose fit in the cap **1010** so that it nests inside the cap **1010**. The standard cup **1005** can also be shaped such that it can be inserted into the receptacle **1015** in an upright position as shown in **Figure 10c**. Thus, the receptacle can hold the standard cup in the opening **1035** while the product in the standard cup **1005** is being consumed. The receptacle **1015** may be constructed with a curved, generally cylindrical shape as shown in **Figure 10** to allow the container to be easily gripped by a consumer in one hand. The shape shown in **Figure 10** is such that the container fits both large and small hands comfortably. The receptacle can also be sized such that the receptacle **1015** will fit in a cup holder in an automobile or airplane, for instance, to allow ease of consumption while the consumer is "on the go." As an example of how the container of **Figure 10** may be utilized

by a consumer, the container is opened and the seals removed from the receptacle 1015 and the standard cup 1005. The consumer can then pour some product (chips, for example) out of the receptacle 1015 into the removable cap 1010. Then the standard cup 1005 can be nested inside the opening of the receptacle 1015 and the container placed into a cup holder. The consumer
5 then eats the chips out of the removable cap 1010 while dipping the chips into the dip contained in the standard cup 1005. In this manner, the consumer can conveniently consume the chips and dip without the need for a table on which to place the dip container.

The cap 1010 has a lip 1020 that protrudes away from the inner wall toward the center of the cap 1010. The receptacle 1015 has a groove 1025 in the mating surface of the receptacle 1015 for receiving the lip 1020 when the cap 1010 is placed on the receptacle 1015. When the container is assembled, the lip 1020 engages the groove 1025 to hold the cap 1010 securely on the receptacle 1015. The cap 1010 may be manufactured from a polypropylene that allows the lip to stretch and the main body to compress while the cap 1010 is "snapped" onto the main body 1015. However, the container of the present invention is not limited to polypropylene. Any flexible material such as a polypropylene-type plastic may be used. The lip and groove feature of this embodiment of the invention acts as a locking mechanism to prevent the container from being inadvertently opened. Because of this positive engagement, the use of an outer layer, although optional, is not necessary to hold the container together. Although this embodiment is described in terms of a lip and groove mating surface, this invention is not limited to this
20 particular type of mating surface. Other mating surfaces may be used without departing from the scope and spirit of the invention. The cap 1010 may also be manufactured such that the standard

cup 1005 may be seen through the cap 1010, thus allowing a consumer to see the standard cup 1005 without opening the container. This provides added marketing appeal to the container.

Although not limited to any particular method of manufacturing, the receptacle 1015 can be manufactured using an extrusion blow molding wheel commonly known in the art. The shape shown in **Figure 10** can be formed using a dual parrison, mouth to mouth mold. This results in a high output, low-cost container. The materials used in manufacturing the container should be such that the container has effective barrier properties for the product. A container has effective barrier properties when it maintains product integrity under normal conditions for the designed shelf-life of the product.

An outer layer may also be placed around the container for additional barrier protection and decoration as described in reference to **Figure 1**. If the cap 1010 is transparent, the outer layer should also be transparent on the bottom to allow the standard cup 1005 to be seen through the cap 1010. When the product is consumed, the consumer may either eat the chips or other food product directly out of the mouth of the container 1035 or it may be poured into the cap 1010 after the standard cup 1005 is removed. Preferably the mouth of the receptacle 1015 is wide enough to allow easy consumption of the product directly from the receptacle 1015. After consuming a portion of the product, the standard cup 1005 can be placed into the main body 1015 in an upright position as shown in **Figure 10c**. The cap 1010 is snapped back onto the container to hold the standard cup 1005 in place and allow for convenient storage of the container in a refrigeration unit such that the dip, chili, or other product in the standard cup 1005 is preserved for later consumption. This method of re-closing the container prevents the two products from undesirably mixing together.

The embodiment shown in **Figures 9 and 10** for a food product combination “kit” is more portable and easier to use than prior art combination containers. The container is ergonomically shaped to allow it to be easily handled for people with an “on the go” lifestyle, and yet is large enough to handle the package and access the product while it is being consumed. The shape is also more appealing and takes up much less shelf space than current combination containers. The cost of producing the container disclosed is also much lower than prior “kits” because large trays and packaging film are eliminated.

Figure 11 illustrates a container for holding multiple products in separate compartments in which a pouch is used to hold one of the products inside the cap. Although the containers illustrated in **Figures 9 and 10** illustrate a chip and dip combination, the present invention is not limited to a chip and dip combination nor is it limited to food products. Another use of the multi-functional container, for example, is to place food product in the receptacle **1120** of the container while placing a promotional item such as a prize, a toy, a ball, a contest item, a collectible, a coupon, or other non-food item inside a pouch **1130** to be held inside the cap **1110** when the cap **1110** is mated with the receptacle **1120**. Although a pouch **1130** is illustrated for holding the promotional item, the pouch is not necessary. The promotional item can also be placed directly inside the cap **1110** without a pouch or covering. The advantage of placing the promotional item **1130** in the cap rather than in the receptacle **1120** of the container along with the food product is that the food product is kept out of direct or indirect contact with the promotional item **1130** by the membrane or seal **1140** on the receptacle **1120**. Thus, any concerns about contamination of the food product by the promotional item **1130** are alleviated. This reduces the cost of compliance with federal regulations regarding items in direct or indirect

contact with food products. Prior art containers having promotional items inside the container have placed them either in direct or indirect contact with the food product. The present invention, however, allows the promotional pieces to be placed inside a portable container while keeping the promotional pieces separated from the food product. Furthermore, the present invention allows the volume of the food product in the main body of the container to remain unchanged during a promotional campaign. In prior designs, either the volume of the product must be reduced, or the container size must be increased when a promotional piece is inserted to maintain the same volume of product.

Although the container in **Figure 11** illustrates a single prize being placed inside the cap **1110**, the invention is not limited to a single cap or a single prize, nor is the particular shape of the cap limited to that shown. In another embodiment, two caps could be placed on each end with food products and/or promotional items in each cap, or a cap can be placed on one end and a molded prize attached to the other end. For example, in addition to placing a prize or food product inside the cap **1110**, another prize that is molded to fit the base of the receptacle **1120** could be removably attached directly to the bottom of the container to form part of the overall shape of the container. This prize could be, for example, an injection molded stencil toy that could be removed by a consumer and a picture drawn by the consumer marking through the stencil onto a piece of paper. In such an embodiment, the portability of the container is maintained while also keeping the food product separate from the promotional items.

It should be understood that all of the alternative container embodiments discussed above can incorporate a multi-functional cap with a shape to accommodate the overall container shape. For example, a multi-functional cap could be used with the square container shapes illustrated in

